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Building & Highway Material Testing Laboratory

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Job No.: CTCE/BBMP/SR/W.No.14/BC/Sp_Wa/2016-17 24.03.2017

TEST REEPORT ON SPECIFIC GRAVITY AND WATER ABSORPTION

* Customer	:	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. Sreeramreddy,** #62, Behind Widia Ashok Nagara, Nagasandra (P), Bangalore.
* Name of Work	:	Improvements to Roads and Drain at 4th and 5th cross MHR Layout in Bagalagunte Ward No.14, Dasarahalli Sub Division, BBMP, Bangalore.
* Reference	:	BBMP/DZ/AEE/TDSD/PR/759/2016-17 Dated: 20.02.2017
* Sample ID	:	Hot mix plant, Bangalore
Technical Reference	:	IS : 2386(Part -3)-1963 (RA-2011)
* Type of Mix	:	Bituminous Concrete
Date of Testing	:	24.03.2017

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2010	2011	2012	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1239	1238	1257	
4	Weight of saturated surface dry aggregate in air	W_3 g	2009	2010	2011	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	770	772	754	
6	Weight of oven dried aggregate	W_4 g	2000	1999	1998	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.597	2.589	2.650	2.612
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.628	2.627	2.696	2.650
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.45%	0.55%	0.65%	0.55%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%

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Job No: CTCE/BBMP/SR/W.No.14/BC/Bitumen/2016-17 24.03.2017

TEST REPORT ON BITUMEN CONTENT OF BITUMINOUS CONCRETE MIX

* Customer	:	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. Sreeramreddy,** #62, Behind Widia Ashok Nagara, Nagasandra (P), Bangalore.
* Name of Work	:	Improvements to Roads and Drain at 4th and 5th cross MHR Layout in Bagalagunte Ward No.14, Dasarahalli Sub Division, BBMP, Bangalore.
* Reference	:	BBMP/DZ/AEE/TDSD/PR/759/2016-17 Dated: 20.02.2017
* Sample ID	:	Roads in MHR layout, Ward no.14
Technical Reference	:	IRC:SP:11-1984
Date of Testing	:	24.03.2017

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BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	474	473.5
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	26	26.50
7. Bitumen content in %	5.20	5.30
8. Average	5.25	

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Job No: CTCE/BBMP/SR/W.No.14/BC/Bitumen/2016-17 24.03.2017

TEST REPORT ON BITUMEN CONTENT AFTER GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

* Customer	:	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. Sreeramreddy,** #62, Behind Widia Ashok Nagara, Nagasandra (P), Bangalore.
* Name of Work	:	Improvements to Roads and Drain at 4th and 5th cross MHR Layout in Bagalagunte Ward No.14, Dasarahalli Sub Division, BBMP, Bangalore.
* Reference	:	BBMP/DZ/AEE/TDSD/PR/759/2016-17 Dated: 20.02.2017
* Sample ID	:	Roads in MHR layout, Ward no.14
Technical Reference	:	IRC:SP:11-1984
Date of Testing	:	24.03.2017

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-18 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	46.35	9.78	9.78	90.22	79-100
9.5	36.3	7.66	17.44	82.56	70-88
4.75	71.23	15.03	32.46	67.54	53-71
2.36	68.25	14.40	46.86	53.14	42-58
1.18	51.22	10.81	57.67	42.33	34-48
0.6	52.32	11.04	68.71	31.29	26-38
0.3	46.32	9.77	78.48	21.52	18-28
0.15	36.32	7.66	86.14	13.86	12-20
0.075	33.25	7.01	93.16	6.84	4-10

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-18 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	34.25	7.23	7.23	92.77	79-100
9.5	42.36	8.95	16.18	83.82	70-88
4.75	62.15	13.13	29.31	70.69	53-71
2.36	73.15	15.45	44.75	55.25	42-58
1.18	64.15	13.55	58.30	41.70	34-48
0.6	56.36	11.90	70.20	29.80	26-38
0.3	33.26	7.02	77.23	22.77	18-28
0.15	30.22	6.38	83.61	16.39	12-20
0.075	40.22	8.49	92.11	7.89	4-10

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Job No.: CTCE/BBMP/SR/W.No.14/BC/Agg/2016-17 24.03.2017

TEST REPORT ON GRADATION OF AGGREGATE

* Customer	:	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. Sreeramreddy,** #62, Behind Widia Ashok Nagara, Nagasandra (P), Bangalore.
* Name of Work	:	Improvements to Roads and Drain at 4th and 5th cross MHR Layout in Bagalagunte Ward No.14, Dasarahalli Sub Division, BBMP, Bangalore.
* Reference	:	BBMP/DZ/AEE/TDSD/PR/759/2016-17 Dated: 20.02.2017
* Sample ID	:	Bituminous Concrete
Technical Reference	:	IS : 2386(Part -1)-1963 (RA-2011)
* Type of Mix	:	Hot mix plant, Bangalore
Date of Testing	:	24.03.2017

Total Weight of Sample: **5150** gm

Sieve Size, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per `MORTH 500-18
13.2	780	15.15	15.15	84.85	79 - 100	
9.5	530	10.29	25.44	74.56	70 - 88	
4.75	630	12.23	37.67	62.33	53 - 71	
2.36	525	10.19	47.86	52.14	42 - 58	
1.18	530	10.29	58.16	41.84	34 - 48	
0.600	550	10.68	68.83	31.17	26 - 38	
0.300	590	11.46	80.29	19.71	18 - 28	
0.150	300	5.83	86.12	13.88	12 - 20	
0.075	325	6.31	92.43	7.57	4 - 10	

Total Weight of Sample: **5200** gm

Sieve Size, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH 500-18
13.2	620	11.92	11.92	88.08	79 - 100	
9.5	525	10.10	22.02	77.98	70 - 88	
4.75	620	11.92	33.94	66.06	53 - 71	
2.36	585	11.25	45.19	54.81	42 - 58	
1.18	630	12.12	57.31	42.69	34 - 48	
0.600	515	9.90	67.21	32.79	26 - 38	
0.300	560	10.77	77.98	22.02	18 - 28	
0.150	365	7.02	85.00	15.00	12 - 20	
0.075	420	8.08	93.08	6.92	4 - 10	

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Job No.: CTCE/BBMP/SR/W.No.14/BC/Stability/2016-17 24.03.2017

TEST REPORT ON MARSHALL STABILITY OF MIX

*** Customer**	:	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
*** Agency**	:	**Mr. Sreeramreddy,** #62, Behind Widia Ashok Nagara, Nagasandra (P), Bangalore.
***Name of the Work**	:	Improvements to Roads and Drain at 4th and 5th cross MHR Layout in Bagalagunte Ward No.14, Dasarahalli Sub Division, BBMP, Bangalore.
***Reference**	:	BBMP/DZ/AEE/TDSD/PR/759/2016-17 Dated: 20.02.2017
*** Source**	:	Hot mix Plant, Bangalore
*** Type of Mix**	:	Bituminous Concrete
Date of Testing	:	24.03.2017

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshall Stability, Kn	9.55	9.60	9 Kn (min)
2	Marshall flow, mm	3.10	3.25	2 – 4
3	Percent air voids in Mineral Aggregate	3.05	4.50	3 – 6
4	Voids in Compacted Mix	13.65	14.05	13 - 15
5	Percent Voids filled with Bitumen	67.50	68.50	65 - 75
6	Density, g/cc	2.27	2.28	--

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ಟಿ.ದಾಸರಹಳ್ಳಿ ಉಪ-ವಿಭಾಗ
ಬಾಗಲಗುಂಟೆ, ಬಿಬಿಎಂಪಿ
ಬೆಂಗಳೂರು